

Submission Date: \_\_\_\_\_

Priority: \_\_\_\_\_ of \_\_\_\_\_



# Ted Stevens

United States Senator for Alaska

**Please Note:**

- Fill out one request form for each request
- This form (and any attachments) can be returned via:

Fax - (202) 224-2354

Mail - The Honorable Ted Stevens  
United States Senate  
522 Hart Senate Office Bldg.  
Washington, D.C. 20510

**- Requests are due by February 15, 2008.**

## FISCAL YEAR 2009 PROJECT REQUEST FORM

Project Name: Alaskan Plasma Assisted Combustion Project (APACP)

Project Location: Nikolski, Alaska

Project Description (please attach additional pages as required):

See Attached.

Related Appropriations Bill: Energy and Water Development

Amount of federal funding requested for FY09: \$4,500,000

**Total** funding to complete this project: \$4,500,000

Number of years to fund this project: 1

Matching funds from the State of Alaska: \$0

Matching funds from local and private entities:

If this project was funded in prior appropriations bills (within the last five years), list each bill and the amount funded:

Amount included in the President's FY09 Budget: \_\_\_\_\_

Amount included in the State of Alaska FY09 Budget: \_\_\_\_\_

☐ Check this box if state funding was sought but not provided.

List legislation that authorizes this project:

US Code Title 42, Chapter 84, Section 7144d  
Office Arctic Energy

**Check all that apply:**

- ☐ A change in the current law is necessary in order to proceed with the project. (If so, attach language and a list of laws that need to be amended)
- ☐ Bill or report language is needed. (If so, attach requested language)

The Alaskan Plasma Assisted Combustion Project (APACP) is a one year project intended to design, develop, test and deploy a prototype of an environmentally friendly 20 kW electric generator utilizing advanced plasma combustion technology. This plasma-assisted generator can be used as a full-time source of electricity or could be used as a backup generator for emergency situations.

Ensuring the United States' access to clean and affordable energy will be one of the greatest challenges of the 21st Century. As the price of oil continues to rise it has become increasingly important to develop alternative methods of powering America's homes, industries, businesses and transportation needs. Eliminating the United State's dependence on foreign sources of energy has become an integral piece in the process of ensuring homeland security, promoting a healthy economy and remaining prepared for the challenges of ahead.

The access to clean and affordable energy has long been a challenge facing the remote villages of Alaska's remote regions. New cutting-edge plasma technology may provide a long-term solution to meet their energy needs as well as all Americans. Recent advances in plasma technology have paved the way for clean and efficient power generation utilizing multiple US feedstocks from coal to natural gas to recycled tires. The primary advantage of plasma combustion is that it achieves a much higher temperature than standard incineration and reaches the melting point of all solid containments, such as mercury and arsenic, which are contained in an easily manageable slag. Plasma combustion also creates a synthesis gas (syn-gas) that may be used in a range of power generating mechanisms. This project is designed to assist the Arctic Energy Office (AEO) in its goal to provide cleaner and more affordable energy options by creating a prototype of a plasma-fired electric generator for initial deployment in Alaska's remote regions.

As the world's largest economy, the United States must remain on the frontlines of alternative energy research and development. This project and the resulting technology will be another step towards eliminating our dependence on foreign sources of energy and provide a cleaner alternative for domestic energy production. The creation and combustion of syn-gas is a proven technology which has already increased the efficiency of combusting common feedstocks. Current methods of deriving syn-gas have exhibited its potential of competing with coal, natural gas and petroleum as a primary source of energy. With new plasma technology this potential becomes a reality. Plasma combustion opens many doors for the domestic production of clean, efficient and affordable energy. The two greatest benefits of plasma assisted combustion are the near limitless range of domestically acquired feedstocks which may be reformed into syn-gas, and its ability to capture environmentally dangerous hard metal particles commonly associated with energy production.

This project will include the following steps:

- Assemble a seven person team of experts in the field of applied plasma science led by Dr. Igor Matveev.
- Design and model comprehensive schematic plans for the creation of a plasma assisted feedstock reformer.
- Develop a prototype of a generator using a plasma assisted combustion system to convert multiple feedstocks into syn-gas containing primarily hydrogen and carbon-monoxide for use in a specially modified 20 kW generator.
- Test the syn-gas generator's fuel reformation system's critical components and develop technical improvements to maximize energy output and minimize greenhouse gas emissions.
- Equip a 20 kW generator with a feedstock fuel feeder, plasma feedstock reformer, and to demonstrate reliable and continuous operation with much cleaner exhaust when compared to conventional methods of coal generated power.
- Finalize design, conduct final series of tests and submit final report to the AEO.
- Deploy unit in Nikolski, Alaska and demonstrate reliable and continuous operation.